

AMENDMENTS TO SPECIFICATION

On page 1, paragraph [0002] is amended to read:

[0002] To provide a readily machine-readable coding (a detectable or observable signal or character for communication) for a security paper it was proposed in the ~~patent~~ US 6,974,623 print WO 01/48311 to provide the security paper with at least two types of mottling fibers that differ with regard to their luminescent properties. Only one of the different mottling fibers is in each case located in defined, nonoverlapping partial ~~ar-eas~~ areas of the security paper, so that the geometric arrangement of the partial areas and the presence or absence of mottling fibers permit a coding to be produced. However, the number of thus producible geometric arrangements is limited due to the very limited space available on a security paper.

On page 1, paragraph [0005] is amended to read:

[0005] According to the invention, the coding is in the form of a composition and has at least one pair of mutually associated luminescent substances, each pair including ~~having~~ first and second luminescent substances which emit in a joint emission range located outside the visible spectral range. The emission spectra of the first and second luminescent substances overlap in at least a subrange of the stated emission range such that the emission spectrum of the first luminescent substance is complemented characteristically by the emission spectrum of the second luminescent substance. That is, the spectrum of luminescence emissions of the first luminescent substance overlaps in a subrange with a subrange of the spectrum of luminescence emissions of the second luminescent substance to define a joint or resultant emission range or in other words, an envelope of luminescence emissions, that is detectable or observable as a combination of the two emission spectra, such that each of the first and second luminescent substances can be said to complement or mutually complement the other to produce the whole of the joint emission range or envelope of luminescence emissions. This provides a high-quality and high-security coding in which the spectral resolution of the mutually complementary luminescence emissions can only be obtained with great technical effort. At the same time, a large number of codings can be produced by the multiplicity of possible pairs of luminescent substances.

On page 3, paragraph [0011] is amended to read:

[0011] According to another advantageous variant, the first and/or second luminescent substance is a luminescent substance based on a host lattice doped with a chromophore, the chromophore being selected from the group of scandium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper and zinc. The dopants and host lattices stated in ~~US 2004/0105962~~ WO 02/070279 are also suitable for use as luminescent substances in inventive codings. At least one of the host lattices can be doped with a plurality of chromophores. Obviously, the two variants can be combined, i.e. one of the luminescent substances formed on the basis of a rare earth doped host lattice, the other luminescent substance on the basis of a host lattice with a chromophore.

On page 3, paragraph [0012] is amended to read:

[0012] The host lattice can have for example a perovskite structure or a garnet structure. At least one of the host lattices can also be formed by a mixed crystal. Further possible embodiments of the host lattices and the dopants are specified in ~~US 4,452,834 EP-B-0 052 624~~ or ~~US 4,451,530 EP-B-0 053 124~~, whose disclosures are included in the present application in this respect.

On page 3, paragraph [0014] is amended to read:

[0014] The stated subrange where the luminescence spectra of the first and second luminescent substances complementarily overlap (i.e., where the luminescence emissions overlap to produce a combined or resultant luminescence emission, with the first and second substances complementing the other to produce the resultant emission) preferably has a width of 200 nm or less, preferably 100 nm or less. In a preferred embodiment, the subrange extends from about 850 nm to about 970 nm. In other, likewise advantageous embodiments, the subrange extends from about 920 nm to about 1060 nm, or from about 1040 nm to about 1140 nm, or from about 1100 nm to about 1400 nm, preferably from about 1100 nm to about 1250 nm, particularly preferably from about 1120 nm to about 1220 nm, or from about 1300 nm to about 1500 nm, or from about 1400 nm to about 1700 nm.

On page 4, paragraph [0018] is amended to read:

[0018] It is also possible to provide still further luminescent substances which further complement the inventive pair of luminescent substances to form a combined or resultant emission spectrum. Thus, the additional luminescent substances can emit in the same

subrange of the spectrum and further complement the emission spectrum of the inventive pair of luminescent substances.

On page 5, paragraph [0023] is amended to read:

[0023] One or more of the luminescent substances can also be incorporated into the volume of the value document, in particular the value document substrate. Incorporating the luminescent substances into the volume of a paper substrate can be done for example by a method as described in the prints EP-A 0 659 935 ~~US 5,897,746, US 6,936,138 and US 7,175,739~~ DE 101 20 818. The disclosures of the stated prints are included in the present application in this respect.

On page 6, paragraph [0027] is amended to read:

[0027] Fig. 1 shows an object, for example, a value document 10, to be secured which is provided with a coding 11 according to one embodiment of the invention.